



SEQUENCE LISTING

<110> Mostoslavsky, Keith E.
Chapin, Steven J.
Richman-Eisenstat, Janice
The Regents of the University of California

<120> Ligands Directed to the Non-Secretory Component,
Non-Stalk Region of pIgR and Methods of Use Thereof

<130> 18062E-000910US

<140> US 09/818,247

<141> 2001-03-26

<150> WO PCT/US01/09699

<151> 2001-03-26

<150> US 60/192,197

<151> 2000-03-27

<150> US 60/192,198

<151> 2000-03-27

<160> 26

<170> PatentIn Ver. 2.1

<210> 1

<211> 764

<212> PRT

<213> Homo sapiens

<220>

<223> human polymeric Immunoglobulin receptor (pIgR)

<400> 1

Met Leu Leu Phe Val Leu Thr Cys Leu Leu Ala Val Phe Pro Ala Ile
1 5 10 15

Ser Thr Lys Ser Pro Ile Phe Gly Pro Glu Glu Val Asn Ser Val Glu
20 25 30

Gly Asn Ser Val Ser Ile Thr Cys Tyr Tyr Pro Pro Thr Ser Val Asn
35 40 45

Arg His Thr Arg Lys Tyr Trp Cys Arg Gln Gly Ala Arg Gly Gly Cys
50 55 60

Ile Thr Leu Ile Ser Ser Glu Gly Tyr Val Ser Ser Lys Tyr Ala Gly
65 70 75 80

Arg Ala Asn Leu Thr Asn Phe Pro Glu Asn Gly Thr Phe Val Val Asn
85 90 95

Ile Ala Gln Leu Ser Gln Asp Asp Ser Gly Arg Tyr Lys Cys Gly Leu
100 105 110

Gly Ile Asn Ser Arg Gly Leu Ser Phe Asp Val Ser Leu Glu Val Ser
115 120 125

Gln Gly Pro Gly Leu Leu Asn Asp Thr Lys Val Tyr Thr Val Asp Leu
 130 135 140
 Gly Arg Thr Val Thr Ile Asn Cys Pro Phe Lys Thr Glu Asn Ala Gln
 145 150 155 160
 Lys Arg Lys Ser Leu Tyr Lys Gln Ile Gly Leu Tyr Pro Val Leu Val
 165 170 175
 Ile Asp Ser Ser Gly Tyr Val Asn Pro Asn Tyr Thr Gly Arg Ile Arg
 180 185 190
 Leu Asp Ile Gln Gly Thr Gly Gln Leu Leu Phe Ser Val Val Ile Asn
 195 200 205
 Gln Leu Arg Leu Ser Asp Ala Gly Gln Tyr Leu Cys Gln Ala Gly Asp
 210 215 220
 Asp Ser Asn Ser Asn Lys Lys Asn Ala Asp Leu Gln Val Leu Lys Pro
 225 230 235 240
 Glu Pro Glu Leu Val Tyr Glu Asp Leu Arg Gly Ser Val Thr Phe His
 245 250 255
 Cys Ala Leu Gly Pro Glu Val Ala Asn Val Ala Lys Phe Leu Cys Arg
 260 265 270
 Gln Ser Ser Gly Glu Asn Cys Asp Val Val Val Asn Thr Leu Gly Lys
 275 280 285
 Arg Ala Pro Ala Phe Glu Gly Arg Ile Leu Leu Asn Pro Gln Asp Lys
 290 295 300
 Asp Gly Ser Phe Ser Val Val Ile Thr Gly Leu Arg Lys Glu Asp Ala
 305 310 315 320
 Gly Arg Tyr Leu Cys Gly Ala His Ser Asp Gly Gln Leu Gln Glu Gly
 325 330 335
 Ser Pro Ile Gln Ala Trp Gln Leu Phe Val Asn Glu Glu Ser Thr Ile
 340 345 350
 Pro Arg Ser Pro Thr Val Val Lys Gly Val Ala Gly Ser Ser Val Ala
 355 360 365
 Val Leu Cys Pro Tyr Asn Arg Lys Glu Ser Lys Ser Ile Lys Tyr Trp
 370 375 380
 Cys Leu Trp Glu Gly Ala Gln Asn Gly Arg Cys Pro Leu Leu Val Asp
 385 390 395 400
 Ser Glu Gly Trp Val Lys Ala Gln Tyr Glu Gly Arg Leu Ser Leu Leu
 405 410 415
 Glu Glu Pro Gly Asn Gly Thr Phe Thr Val Ile Leu Asn Gln Leu Thr
 420 425 430
 Ser Arg Asp Ala Gly Phe Tyr Trp Cys Leu Thr Asn Gly Asp Thr Leu
 435 440 445
 Trp Arg Thr Thr Val Glu Ile Lys Ile Ile Glu Gly Glu Pro Asn Leu

450	455	460
Lys Val Pro Gly Asn Val Thr Ala Val Leu Gly Glu Thr Leu Lys Val		
465	470	475 480
Pro Cys His Phe Pro Cys Lys Phe Ser Ser Tyr Glu Lys Tyr Trp Cys		
	485	490 495
Lys Trp Asn Asn Thr Gly Cys Gln Ala Leu Pro Ser Gln Asp Glu Gly		
	500	505 510
Pro Ser Lys Ala Phe Val Asn Cys Asp Glu Asn Ser Arg Leu Val Ser		
	515	520 525
Leu Thr Leu Asn Leu Val Thr Arg Ala Asp Glu Gly Trp Tyr Trp Cys		
	530	535 540
Gly Val Lys Gln Gly His Phe Tyr Gly Glu Thr Ala Ala Val Tyr Val		
	545	550 555 560
Ala Val Glu Glu Arg Lys Ala Ala Gly Ser Arg Asp Val Ser Leu Ala		
	565	570 575
Lys Ala Asp Ala Ala Pro Asp Glu Lys Val Leu Asp Ser Gly Phe Arg		
	580	585 590
Glu Ile Glu Asn Lys Ala Ile Gln Asp Pro Arg Leu Phe Ala Glu Glu		
	595	600 605
Lys Ala Val Ala Asp Thr Arg Asp Gln Ala Asp Gly Ser Arg Ala Ser		
	610	615 620
Val Asp Ser Gly Ser Ser Glu Glu Gln Gly Gly Ser Ser Arg Ala Leu		
	625	630 635 640
Val Ser Thr Leu Val Pro Leu Gly Leu Val Leu Ala Val Gly Ala Val		
	645	650 655
Ala Val Gly Val Ala Arg Ala Arg His Arg Lys Asn Val Asp Arg Val		
	660	665 670
Ser Ile Arg Ser Tyr Arg Thr Asp Ile Ser Met Ser Asp Phe Glu Asn		
	675	680 685
Ser Arg Glu Phe Gly Ala Asn Asp Asn Met Gly Ala Ser Ser Ile Thr		
	690	695 700
Gln Glu Thr Ser Leu Gly Gly Lys Glu Glu Phe Val Ala Thr Thr Glu		
	705	710 715 720
Ser Thr Thr Glu Thr Lys Glu Pro Lys Lys Ala Lys Arg Ser Ser Lys		
	725	730 735
Glu Glu Ala Glu Met Ala Tyr Lys Asp Phe Leu Leu Gln Ser Ser Thr		
	740	745 750
Val Ala Ala Glu Ala Gln Asp Gly Pro Gln Glu Ala		
	755	760

<210> 2

<211> 757
 <212> PRT
 <213> Bos taurus

<220>

<223> bovine polymeric immunoglobulin receptor (pIgR)

<400> 2

```

Met Ser Arg Leu Phe Leu Ala Cys Leu Leu Ala Ile Phe Pro Val Val
  1           5           10           15

Ser Met Lys Ser Pro Ile Phe Gly Pro Glu Glu Val Thr Ser Val Glu
      20           25           30

Gly Arg Ser Val Ser Ile Lys Cys Tyr Tyr Pro Pro Thr Ser Val Asn
      35           40           45

Arg His Thr Arg Lys Tyr Trp Cys Arg Gln Gly Ala Gln Gly Arg Cys
      50           55           60

Thr Thr Leu Ile Ser Ser Glu Gly Tyr Val Ser Asp Asp Tyr Val Gly
      65           70           75           80

Arg Ala Asn Leu Thr Asn Phe Pro Glu Ser Gly Thr Phe Val Val Asp
      85           90           95

Ile Ser His Leu Thr His Lys Asp Ser Gly Arg Tyr Lys Cys Gly Leu
      100           105           110

Gly Ile Ser Ser Arg Gly Leu Asn Phe Asp Val Ser Leu Glu Val Ser
      115           120           125

Gln Asp Pro Ala Gln Ala Ser His Ala His Val Tyr Thr Val Asp Leu
      130           135           140

Gly Arg Thr Val Thr Ile Asn Cys Pro Phe Thr Arg Ala Asn Ser Glu
      145           150           155           160

Lys Arg Lys Ser Leu Cys Lys Lys Thr Ile Gln Asp Cys Phe Gln Val
      165           170           175

Val Asp Ser Thr Gly Tyr Val Ser Asn Ser Tyr Lys Asp Arg Ala His
      180           185           190

Ile Ser Ile Leu Gly Thr Asn Thr Leu Val Phe Ser Val Val Ile Asn
      195           200           205

Arg Val Lys Leu Ser Asp Ala Gly Met Tyr Val Cys Gln Ala Gly Asp
      210           215           220

Asp Ala Lys Ala Asp Lys Ile Asn Ile Asp Leu Gln Val Leu Glu Pro
      225           230           235           240

Glu Pro Glu Leu Val Tyr Gly Asp Leu Arg Ser Ser Val Thr Phe Asp
      245           250           255

Cys Ser Leu Gly Pro Glu Val Ala Asn Val Pro Lys Phe Leu Cys Gln
      260           265           270

Lys Lys Asn Gly Gly Ala Cys Asn Val Val Ile Asn Thr Leu Gly Lys
      275           280           285

```

Lys	Ala	Gln	Asp	Phe	Gln	Gly	Arg	Ile	Val	Ser	Val	Pro	Lys	Asp	Asn	290	295	300	
Gly	Val	Phe	Ser	Val	His	Ile	Thr	Ser	Leu	Arg	Lys	Glu	Asp	Ala	Gly	305	310	315	320
Arg	Tyr	Val	Cys	Gly	Ala	Gln	Pro	Glu	Gly	Glu	Pro	Gln	Asp	Gly	Trp	325	330	335	
Pro	Val	Gln	Ala	Trp	Gln	Leu	Phe	Val	Asn	Glu	Glu	Thr	Ala	Ile	Pro	340	345	350	
Ala	Ser	Pro	Ser	Val	Val	Lys	Gly	Val	Arg	Gly	Gly	Ser	Val	Thr	Val	355	360	365	
Ser	Cys	Pro	Tyr	Asn	Pro	Lys	Asp	Ala	Asn	Ser	Ala	Lys	Tyr	Trp	Cys	370	375	380	
His	Trp	Glu	Glu	Ala	Gln	Asn	Gly	Arg	Cys	Pro	Arg	Leu	Val	Glu	Ser	385	390	395	400
Arg	Gly	Leu	Ile	Lys	Glu	Gln	Tyr	Glu	Gly	Arg	Leu	Ala	Leu	Leu	Thr	405	410	415	
Glu	Pro	Gly	Asn	Gly	Thr	Tyr	Thr	Val	Ile	Leu	Asn	Gln	Leu	Thr	Asp	420	425	430	
Gln	Asp	Thr	Gly	Phe	Tyr	Trp	Cys	Val	Thr	Asp	Gly	Asp	Thr	Arg	Trp	435	440	445	
Ile	Ser	Thr	Val	Glu	Leu	Lys	Val	Val	Gln	Gly	Glu	Pro	Ser	Leu	Lys	450	455	460	
Val	Pro	Lys	Asn	Val	Thr	Ala	Trp	Leu	Gly	Glu	Pro	Leu	Lys	Leu	Ser	465	470	475	480
Cys	His	Phe	Pro	Cys	Lys	Phe	Tyr	Ser	Phe	Glu	Lys	Tyr	Trp	Cys	Lys	485	490	495	
Trp	Ser	Asn	Arg	Gly	Cys	Ser	Ala	Leu	Pro	Thr	Gln	Asn	Asp	Gly	Pro	500	505	510	
Ser	Gln	Ala	Phe	Val	Ser	Cys	Asp	Gln	Asn	Ser	Gln	Val	Val	Ser	Leu	515	520	525	
Asn	Leu	Asp	Thr	Val	Thr	Lys	Glu	Asp	Glu	Gly	Trp	Tyr	Trp	Cys	Gly	530	535	540	
Val	Lys	Glu	Gly	Pro	Arg	Tyr	Gly	Glu	Thr	Ala	Ala	Val	Tyr	Val	Ala	545	550	555	560
Val	Glu	Ser	Arg	Val	Lys	Gly	Ser	Gln	Gly	Ala	Lys	Gln	Val	Lys	Ala	565	570	575	
Ala	Pro	Ala	Gly	Ala	Ala	Ile	Gln	Ser	Arg	Ala	Gly	Glu	Ile	Gln	Asn	580	585	590	
Lys	Ala	Leu	Leu	Asp	Pro	Ser	Phe	Phe	Ala	Lys	Glu	Ser	Val	Lys	Asp	595	600	605	

Ala Ala Gly Gly Pro Gly Ala Pro Ala Asp Pro Gly Arg Pro Thr Gly
 610 615 620
 Tyr Ser Gly Ser Ser Lys Ala Leu Val Ser Thr Leu Val Pro Leu Ala
 625 630 635 640
 Leu Val Leu Val Ala Gly Val Val Ala Ile Gly Val Val Arg Ala Arg
 645 650 655
 His Arg Lys Asn Val Asp Arg Ile Ser Ile Arg Ser Tyr Arg Thr Asp
 660 665 670
 Ile Ser Met Ser Asp Phe Glu Asn Ser Arg Asp Phe Glu Gly Arg Asp
 675 680 685
 Asn Met Gly Ala Ser Pro Glu Ala Gln Glu Thr Ser Leu Gly Gly Lys
 690 695 700
 Asp Glu Phe Ala Thr Thr Thr Glu Asp Thr Val Glu Ser Lys Glu Pro
 705 710 715 720
 Lys Lys Ala Lys Arg Ser Ser Lys Glu Glu Ala Asp Glu Ala Phe Thr
 725 730 735
 Thr Phe Leu Leu Gln Ala Lys Asn Leu Ala Ser Ala Ala Thr Gln Asn
 740 745 750
 Gly Pro Thr Glu Ala
 755

<210> 3
 <211> 769
 <212> PRT
 <213> Rattus sp.

<220>
 <223> rat polymeric immunoglobulin receptor (pIgR)

<400> 3
 Met Arg Leu Ser Leu Phe Ala Leu Leu Val Thr Val Phe Ser Gly Val
 1 5 10 15
 Ser Thr Gln Ser Pro Ile Phe Gly Pro Gln Asp Val Ser Ser Ile Glu
 20 25 30
 Gly Asn Ser Val Ser Ile Thr Cys Tyr Tyr Pro Asp Thr Ser Val Asn
 35 40 45
 Arg His Thr Arg Lys Tyr Trp Cys Arg Gln Gly Ala Asn Gly Tyr Cys
 50 55 60
 Ala Thr Leu Ile Ser Ser Asn Gly Tyr Leu Ser Lys Glu Tyr Ser Gly
 65 70 75 80
 Arg Ala Ser Leu Ile Asn Phe Pro Glu Asn Ser Thr Phe Val Ile Asn
 85 90 95
 Ile Ala His Leu Thr Gln Glu Asp Thr Gly Ser Tyr Lys Cys Gly Leu
 100 105 110

435					440					445					
Arg	Thr	Thr	Ile	Glu	Leu	Gln	Val	Ala	Glu	Ala	Thr	Lys	Lys	Pro	Asp
450						455						460			
Leu	Glu	Val	Thr	Pro	Gln	Asn	Ala	Thr	Ala	Val	Ile	Gly	Glu	Thr	Phe
465					470					475					480
Thr	Ile	Ser	Cys	His	Tyr	Pro	Cys	Lys	Phe	Tyr	Ser	Gln	Glu	Lys	Tyr
				485					490					495	
Trp	Cys	Lys	Trp	Ser	Asn	Asp	Gly	Cys	His	Ile	Leu	Pro	Ser	His	Asp
			500					505					510		
Glu	Gly	Ala	Arg	Gln	Ser	Ser	Val	Ser	Cys	Asp	Gln	Ser	Ser	Gln	Ile
		515					520					525			
Val	Ser	Met	Thr	Leu	Asn	Pro	Val	Lys	Lys	Glu	Asp	Glu	Gly	Trp	Tyr
	530					535					540				
Trp	Cys	Gly	Val	Lys	Glu	Gly	Gln	Val	Tyr	Gly	Glu	Thr	Thr	Ala	Ile
545					550					555					560
Tyr	Val	Ala	Val	Glu	Glu	Arg	Thr	Arg	Gly	Ser	Pro	His	Ile	Asn	Pro
				565					570					575	
Thr	Asp	Ala	Asn	Ala	Arg	Ala	Lys	Asp	Ala	Pro	Glu	Glu	Glu	Ala	Met
			580					585					590		
Glu	Ser	Ser	Val	Arg	Glu	Asp	Glu	Asn	Lys	Ala	Asn	Leu	Asp	Pro	Arg
		595					600					605			
Leu	Phe	Ala	Asp	Glu	Arg	Glu	Ile	Gln	Asn	Ala	Gly	Asp	Gln	Ala	Gln
	610					615					620				
Glu	Asn	Arg	Ala	Ser	Gly	Asn	Ala	Gly	Ser	Ala	Gly	Gly	Gln	Ser	Gly
625					630					635					640
Ser	Ser	Lys	Val	Leu	Phe	Ser	Thr	Leu	Val	Pro	Leu	Gly	Leu	Val	Leu
				645					650					655	
Ala	Val	Gly	Ala	Val	Ala	Val	Trp	Val	Ala	Arg	Val	Arg	His	Arg	Lys
			660					665					670		
Asn	Val	Asp	Arg	Met	Ser	Ile	Ser	Ser	Tyr	Arg	Thr	Asp	Ile	Ser	Met
		675					680					685			
Gly	Asp	Phe	Arg	Asn	Ser	Arg	Asp	Leu	Gly	Gly	Asn	Asp	Asn	Met	Gly
	690					695					700				
Ala	Thr	Pro	Asp	Thr	Gln	Glu	Thr	Val	Leu	Glu	Gly	Lys	Asp	Glu	Ile
705					710					715					720
Glu	Thr	Thr	Thr	Glu	Cys	Thr	Thr	Glu	Pro	Glu	Glu	Ser	Lys	Lys	Ala
				725					730					735	
Lys	Arg	Ser	Ser	Lys	Glu	Glu	Ala	Asp	Met	Ala	Tyr	Ser	Ala	Phe	Leu
			740					745					750		
Phe	Gln	Ser	Ser	Thr	Ile	Ala	Ala	Gln	Val	His	Asp	Gly	Pro	Gln	Glu
		755					760					765			

Ala

<210> 4
<211> 771
<212> PRT
<213> Mus sp.

<220>
<223> mouse polymeric immunoglobulin receptor (pIgR)

<400> 4
Met Arg Leu Tyr Leu Phe Thr Leu Leu Val Thr Val Phe Ser Gly Val
1 5 10 15
Ser Thr Lys Ser Pro Ile Phe Gly Pro Gln Glu Val Ser Ser Ile Glu
20 25 30
Gly Asp Ser Val Ser Ile Thr Cys Tyr Tyr Pro Asp Thr Ser Val Asn
35 40 45
Arg His Thr Arg Lys Tyr Trp Cys Arg Gln Gly Ala Ser Gly Met Cys
50 55 60
Thr Thr Leu Ile Ser Ser Asn Gly Tyr Leu Ser Lys Glu Tyr Ser Gly
65 70 75 80
Arg Ala Asn Leu Ile Asn Phe Pro Glu Asn Asn Thr Phe Val Ile Asn
85 90 95
Ile Glu Gln Leu Thr Gln Asp Asp Thr Gly Ser Tyr Lys Cys Gly Leu
100 105 110
Gly Thr Ser Asn Arg Gly Leu Ser Phe Asp Val Ser Leu Glu Val Ser
115 120 125
Gln Val Pro Glu Leu Pro Ser Asp Thr His Val Tyr Thr Lys Asp Ile
130 135 140
Gly Arg Asn Val Thr Ile Glu Cys Pro Phe Lys Arg Glu Asn Ala Pro
145 150 155 160
Ser Lys Lys Ser Leu Cys Lys Lys Thr Asn Gln Ser Cys Glu Leu Val
165 170 175
Ile Asp Ser Thr Glu Lys Val Asn Pro Ser Tyr Ile Gly Arg Ala Lys
180 185 190
Leu Phe Met Lys Gly Thr Asp Leu Thr Val Phe Tyr Val Asn Ile Ser
195 200 205
His Leu Thr His Asn Asp Ala Gly Leu Tyr Ile Cys Gln Ala Gly Glu
210 215 220
Gly Pro Ser Ala Asp Lys Lys Asn Val Asp Leu Gln Val Leu Ala Pro
225 230 235 240
Glu Pro Glu Leu Leu Tyr Lys Asp Leu Arg Ser Ser Val Thr Phe Glu
245 250 255

Cys Asp Leu Gly Arg Glu Val Ala Asn Glu Ala Lys Tyr Leu Cys Arg
 260 265 270
 Met Asn Lys Glu Thr Cys Asp Val Ile Ile Asn Thr Leu Gly Lys Arg
 275 280 285
 Asp Pro Asp Phe Glu Gly Arg Ile Leu Ile Thr Pro Lys Asp Asp Asn
 290 295 300
 Gly Arg Phe Ser Val Leu Ile Thr Gly Leu Arg Lys Glu Asp Ala Gly
 305 310 315 320
 His Tyr Gln Cys Gly Ala His Ser Ser Gly Leu Pro Gln Glu Gly Trp
 325 330 335
 Pro Ile Gln Thr Trp Gln Leu Phe Val Asn Glu Glu Ser Thr Ile Pro
 340 345 350
 Asn Arg Arg Ser Val Val Lys Gly Val Thr Gly Gly Ser Val Ala Ile
 355 360 365
 Ala Cys Pro Tyr Asn Pro Lys Glu Ser Ser Ser Leu Lys Tyr Trp Cys
 370 375 380
 Arg Trp Glu Gly Asp Gly Asn Gly His Cys Pro Val Leu Val Gly Thr
 385 390 395 400
 Gln Ala Gln Val Gln Glu Glu Tyr Glu Gly Arg Leu Ala Leu Phe Asp
 405 410 415
 Gln Pro Gly Asn Gly Thr Tyr Thr Val Ile Leu Asn Gln Leu Thr Thr
 420 425 430
 Glu Asp Ala Gly Phe Tyr Trp Cys Leu Thr Asn Gly Asp Ser Arg Trp
 435 440 445
 Arg Thr Thr Ile Glu Leu Gln Val Ala Glu Ala Thr Arg Glu Pro Asn
 450 455 460
 Leu Glu Val Thr Pro Gln Asn Ala Thr Ala Val Leu Gly Glu Thr Phe
 465 470 475 480
 Thr Val Ser Cys His Tyr Pro Cys Lys Phe Tyr Ser Gln Glu Lys Tyr
 485 490 495
 Trp Cys Lys Trp Ser Asn Lys Gly Cys His Ile Leu Pro Ser His Asp
 500 505 510
 Glu Gly Ala Arg Gln Ser Ser Val Ser Cys Asp Gln Ser Ser Gln Leu
 515 520 525
 Val Ser Met Thr Leu Asn Pro Val Ser Lys Glu Asp Glu Gly Trp Tyr
 530 535 540
 Trp Cys Gly Val Lys Gln Gly Gln Thr Tyr Gly Glu Thr Thr Ala Ile
 545 550 555 560
 Tyr Ile Ala Val Glu Glu Arg Thr Arg Gly Ser Ser His Val Asn Pro
 565 570 575
 Thr Asp Ala Asn Ala Arg Ala Lys Val Ala Leu Glu Glu Glu Val Val

580					585					590					
Asp	Ser	Ser	Ile	Ser	Glu	Lys	Glu	Asn	Lys	Ala	Ile	Pro	Asn	Pro	Gly
		595					600					605			
Pro	Phe	Ala	Asn	Glu	Arg	Glu	Ile	Gln	Asn	Val	Gly	Asp	Gln	Ala	Gln
	610					615					620				
Glu	Asn	Arg	Ala	Ser	Gly	Asp	Ala	Gly	Ser	Ala	Asp	Gly	Gln	Ser	Arg
625					630					635					640
Ser	Ser	Ser	Ser	Lys	Val	Leu	Phe	Ser	Thr	Leu	Val	Pro	Leu	Gly	Leu
				645					650					655	
Val	Leu	Ala	Val	Gly	Ala	Ile	Ala	Val	Trp	Val	Ala	Arg	Val	Arg	His
			660					665					670		
Arg	Lys	Asn	Val	Asp	Arg	Met	Ser	Ile	Ser	Ser	Tyr	Arg	Thr	Asp	Ile
		675					680					685			
Ser	Met	Ala	Asp	Phe	Lys	Asn	Ser	Arg	Asp	Leu	Gly	Gly	Asn	Asp	Asn
	690					695					700				
Met	Gly	Ala	Ser	Pro	Asp	Thr	Gln	Gln	Thr	Val	Ile	Glu	Gly	Lys	Asp
705					710					715					720
Glu	Ile	Val	Thr	Thr	Thr	Glu	Cys	Thr	Ala	Glu	Pro	Glu	Glu	Ser	Lys
				725					730					735	
Lys	Ala	Lys	Arg	Ser	Ser	Lys	Glu	Glu	Ala	Asp	Met	Ala	Tyr	Ser	Ala
			740					745					750		
Phe	Leu	Leu	Gln	Ser	Ser	Thr	Ile	Ala	Ala	Gln	Val	His	Asp	Gly	Pro
		755					760					765			
Gln	Glu	Ala													
		770													

<210> 5
 <211> 732
 <212> PRT
 <213> Didelphis sp.

<220>
 <223> possum polymeric immunoglobulin receptor (pIgR)

<400> 5
 Met Ala Phe Phe Leu Ala Cys Leu Leu Ala Leu Leu Pro Val Val Ser
 1 5 10 15
 Met Lys Ser Pro Ile Phe Gly Pro Lys Gln Val Thr Gly Val Glu Gly
 20 25 30
 Gly Ser Val Ser Ile Gln Cys Phe Tyr Pro Ser Ser Ser Val Asn Arg
 35 40 45
 His Gly Arg Lys Tyr Phe Cys Leu Gln Asn Leu Arg Gln Ser Cys Glu
 50 55 60
 Thr Ile Val Ser Ser Asn Gly Phe Val Ser Glu Arg Phe Ser Gly Arg

65	70	75	80
Ala Lys Leu Thr Asn Phe Pro Gly Asn Asn Ser Phe Leu Ile Gln Ile	85	90	95
Ser Gln Leu Glu Lys Glu Asp Ile Gly Leu Tyr Lys Cys Gly Leu Gly	100	105	110
Thr Ser Asn Arg Gly Leu Ser Phe Asp Ile Thr Leu Glu Val Gly Glu	115	120	125
Gly Pro Asn Leu Pro Asn Asn Thr Glu Val Ile Val Thr Glu Val Gly	130	135	140
Lys Thr Val Ser Ile Asn Cys Pro Phe Gln Glu Gln Asn Thr Gln Asp	145	150	155
Arg Lys Phe Leu Cys Lys Lys Asp Gly Glu Ser Cys Ala Leu Val Ile	165	170	175
Asp Ser Gln Glu Gln Val Gly Pro Asp Tyr Thr Gly Arg Ala Arg Leu	180	185	190
Ser Ile Ser Gly Thr Ser Ser Arg Val Phe Val Val Thr Ile Ser Gln	195	200	205
Ile Lys Arg Gln Asp Val Gly Met Tyr Val Cys Gly Val Gly Glu Asp	210	215	220
Ser Asp Thr Gly Ile Gln Lys Asn Val Asp Leu Lys Leu Leu Glu Pro	225	230	235
Glu Pro Glu Leu Leu Tyr Ala Glu Leu Gly Gly Ser Val Thr Leu Asn	245	250	255
Cys Ala Leu Gly Ser Thr Val Ala Ser Val Pro Lys Phe Leu Cys Gln	260	265	270
Met Arg Ala Lys Glu Thr Cys Asp Leu Val Ile Asn Ser Lys Gly Phe	275	280	285
Thr Asn Asn Ala Thr His Gly Arg Ile Leu Phe Ser His Thr Thr Glu	290	295	300
Thr Gly Ser Phe Ser Ile Met Ile Thr Gln Val Arg Lys Glu Asp Glu	305	310	315
Gly Val Tyr His Cys Gly Ala Gln Glu Asp Gly Gln Pro Ser Glu Glu	325	330	335
Gly Pro Ile Arg Ala Leu Gln Leu Phe Val Ser Glu Glu Thr Thr Val	340	345	350
Pro Lys Ser Pro Leu Val Val Lys Gly Pro Ser Gly Gly Ser Val Thr	355	360	365
Ile Thr Cys His Tyr Asp Pro Lys Lys Asn Asn Thr Leu Lys Tyr Trp	370	375	380
Cys Lys Trp Glu Gly Ser Ser His Cys Thr Lys Leu Val Asp Ser Leu	385	390	395
			400

Gly	Met	Val	Asp	Glu	Ser	Tyr	Glu	Gly	Arg	Val	Ala	Leu	Trp	Asp	Glu	
				405					410					415		
Pro	Glu	Asn	Gly	Ile	Phe	Thr	Val	Ile	Leu	Asn	Gln	Leu	Thr	Pro	Gln	
			420					425					430			
Asp	Ala	Gly	Tyr	Tyr	Trp	Cys	Leu	Ser	Asn	Gly	Glu	His	Asn	Arg	Lys	
		435					440					445				
Ser	Ser	Val	Lys	Ile	Glu	Ile	Asn	Asp	Gly	Gln	Pro	Leu	Leu	Ile	Ala	
		450				455					460					
Pro	Lys	Thr	Val	Thr	Ala	Gln	Leu	Gly	Gln	Ser	Leu	Thr	Ile	Ser	Cys	
					470					475					480	
His	Tyr	Pro	Cys	Lys	Phe	Tyr	Ser	Tyr	Glu	Lys	Tyr	Trp	Cys	Lys	Trp	
				485					490					495		
Ser	Asn	Gln	Gly	Cys	Glu	Thr	Leu	Pro	Thr	Gln	Glu	Glu	Gly	Ser	Ser	
			500					505					510			
Gln	Ala	Phe	Val	Asp	Cys	Asn	Gln	Asn	Ser	Arg	Asn	Val	Ser	Leu	Thr	
		515					520					525				
Leu	Asn	Ser	Val	Thr	Arg	Asp	His	Glu	Gly	Trp	Tyr	Trp	Cys	Gly	Val	
		530				535					540					
Lys	Asn	Gly	Gln	Asn	Tyr	Gly	Glu	Thr	Ile	Ala	Val	Ser	Val	Ala	Ser	
					550					555					560	
Glu	Glu	Glu	Val	Ser	Gly	Asn	Ala	Ile	Gln	Pro	Thr	Asn	Ala	Val	Leu	
				565					570					575		
Asn	Glu	Asp	Ala	Val	Glu	Pro	Lys	Val	Arg	Gly	Lys	Glu	Ile	Glu	Val	
			580					585					590			
Pro	Thr	Asp	Leu	Gly	Ser	Thr	Glu	Glu	His	Ser	Gly	Gly	Ser	Ser	Val	
		595					600					605				
Leu	Val	Ser	Thr	Leu	Val	Pro	Leu	Ala	Leu	Val	Leu	Thr	Val	Gly	Ala	
		610				615					620					
Val	Ala	Leu	Gly	Ile	Ile	Lys	Ala	Arg	Arg	Trp	Arg	Phe	Ser	Asp	Arg	
					630					635					640	
Val	Ser	Val	Gly	Ser	Tyr	Arg	Thr	Asp	Leu	Ser	Met	Ser	Glu	Leu	Glu	
				645					650					655		
Asn	Asn	Pro	Arg	Gln	Phe	Gly	Ala	Asn	Glu	Asn	Met	Asp	Ala	Ser	Val	
			660					665					670			
Gln	Glu	Thr	Thr	Leu	Gly	Gly	Glu	Asp	Glu	Leu	Ala	Thr	Ala	Thr	Glu	
			675				680					685				
Ser	Thr	Val	Glu	Ile	Glu	Glu	Pro	Lys	Lys	Ala	Lys	Arg	Ser	Ser	Lys	
			690			695					700					
Glu	Glu	Ala	Asp	Leu	Ala	Tyr	Ser	Ala	Phe	Leu	Leu	Gln	Ser	Asn	Thr	
					710					715					720	

Ile Ala Ala Glu His Gln Asp Gly Pro Lys Glu Ala
725 730

<210> 6
<211> 773
<212> PRT
<213> Oryctolagus cuniculus

<220>
<223> rabbit polymeric immunoglobulin receptor (pIgR)

<400> 6
Met Ala Leu Phe Leu Leu Thr Cys Leu Leu Ala Val Phe Ser Ala Ala
1 5 10 15
Thr Ala Gln Ser Ser Leu Leu Gly Pro Ser Ser Ile Phe Gly Pro Gly
20 25 30
Glu Val Asn Val Leu Glu Gly Asp Ser Val Ser Ile Thr Cys Tyr Tyr
35 40 45
Pro Thr Thr Ser Val Thr Arg His Ser Arg Lys Phe Trp Cys Arg Glu
50 55 60
Glu Glu Ser Gly Arg Cys Val Thr Leu Ala Ser Thr Gly Tyr Thr Ser
65 70 75 80
Gln Glu Tyr Ser Gly Arg Gly Lys Leu Thr Asp Phe Pro Asp Lys Gly
85 90 95
Glu Phe Val Val Thr Val Asp Gln Leu Thr Gln Asn Asp Ser Gly Ser
100 105 110
Tyr Lys Cys Gly Val Gly Val Asn Gly Arg Gly Leu Asp Phe Gly Val
115 120 125
Asn Val Leu Val Ser Gln Lys Pro Glu Pro Asp Asp Val Val Tyr Lys
130 135 140
Gln Tyr Glu Ser Tyr Thr Val Thr Ile Thr Cys Pro Phe Thr Tyr Ala
145 150 155 160
Thr Arg Gln Leu Lys Lys Ser Phe Tyr Lys Val Glu Asp Gly Glu Leu
165 170 175
Val Leu Ile Ile Asp Ser Ser Ser Lys Glu Ala Lys Asp Pro Arg Tyr
180 185 190
Lys Gly Arg Ile Thr Leu Gln Ile Gln Ser Thr Thr Ala Lys Glu Phe
195 200 205
Thr Val Thr Ile Lys His Leu Gln Leu Asn Asp Ala Gly Gln Tyr Val
210 215 220
Cys Gln Ser Gly Ser Asp Pro Thr Ala Glu Glu Gln Asn Val Asp Leu
225 230 235 240
Arg Leu Leu Thr Pro Gly Leu Leu Tyr Gly Asn Leu Gly Gly Ser Val
245 250 255

Thr Phe Glu Cys Ala Leu Asp Ser Glu Asp Ala Asn Ala Val Ala Ser
 260 265 270
 Leu Arg Gln Val Arg Gly Gly Asn Val Val Ile Asp Ser Gln Gly Thr
 275 280 285
 Ile Asp Pro Ala Phe Glu Gly Arg Ile Leu Phe Thr Lys Ala Glu Asn
 290 295 300
 Gly His Phe Ser Val Val Ile Ala Gly Leu Arg Lys Glu Asp Thr Gly
 305 310 315 320
 Asn Tyr Leu Cys Gly Val Gln Ser Asn Gly Gln Ser Gly Asp Gly Pro
 325 330 335
 Thr Gln Leu Arg Gln Leu Phe Val Asn Glu Glu Ile Asp Val Ser Arg
 340 345 350
 Ser Pro Pro Val Leu Lys Gly Phe Pro Gly Gly Ser Val Thr Ile Arg
 355 360 365
 Cys Pro Tyr Asn Pro Lys Arg Ser Asp Ser His Leu Gln Leu Tyr Leu
 370 375 380
 Trp Glu Gly Ser Gln Thr Arg His Leu Leu Val Asp Ser Gly Glu Gly
 385 390 395 400
 Leu Val Gln Lys Asp Tyr Thr Gly Arg Leu Ala Leu Phe Glu Glu Pro
 405 410 415
 Gly Asn Gly Thr Phe Ser Val Val Leu Asn Gln Leu Thr Ala Glu Asp
 420 425 430
 Glu Gly Phe Tyr Trp Cys Val Ser Asp Asp Asp Glu Ser Leu Thr Thr
 435 440 445
 Ser Val Lys Leu Gln Ile Val Asp Gly Glu Pro Ser Pro Thr Ile Asp
 450 455 460
 Lys Phe Thr Ala Val Gln Gly Glu Pro Val Glu Ile Thr Cys His Phe
 465 470 475 480
 Pro Cys Lys Tyr Phe Ser Ser Glu Lys Tyr Trp Cys Lys Trp Asn Asp
 485 490 495
 His Gly Cys Glu Asp Leu Pro Thr Lys Leu Ser Ser Ser Gly Asp Leu
 500 505 510
 Val Lys Cys Asn Asn Asn Leu Val Leu Thr Leu Thr Leu Asp Ser Val
 515 520 525
 Ser Glu Asp Asp Glu Gly Trp Tyr Trp Cys Gly Ala Lys Asp Gly His
 530 535 540
 Glu Phe Glu Glu Val Ala Ala Val Arg Val Glu Leu Thr Glu Pro Ala
 545 550 555 560
 Lys Val Ala Val Glu Pro Ala Lys Val Pro Val Asp Pro Ala Lys Ala
 565 570 575
 Ala Pro Ala Pro Ala Glu Glu Lys Ala Lys Ala Arg Cys Pro Val Pro

580					585					590						
Arg	Arg	Arg	Gln	Trp	Tyr	Pro	Leu	Ser	Arg	Lys	Leu	Arg	Thr	Ser	Cys	
595					600					605						
Pro	Glu	Pro	Arg	Leu	Leu	Ala	Glu	Glu	Val	Ala	Val	Gln	Ser	Ala	Glu	
610					615					620						
Asp	Pro	Ala	Ser	Gly	Ser	Arg	Ala	Ser	Val	Asp	Ala	Ser	Ser	Ala	Ser	
625					630					635					640	
Gly	Gln	Ser	Gly	Ser	Ala	Lys	Val	Leu	Ile	Ser	Thr	Leu	Val	Pro	Leu	
645					650					655						
Gly	Leu	Val	Leu	Ala	Ala	Gly	Ala	Met	Ala	Val	Ala	Ile	Ala	Arg	Ala	
660					665					670						
Arg	His	Arg	Arg	Asn	Val	Asp	Arg	Val	Ser	Ile	Gly	Ser	Tyr	Arg	Thr	
675					680					685						
Asp	Ile	Ser	Met	Ser	Asp	Leu	Glu	Asn	Ser	Arg	Glu	Phe	Gly	Ala	Ile	
690					695					700						
Asp	Asn	Pro	Ser	Ala	Cys	Pro	Asp	Ala	Arg	Glu	Thr	Ala	Leu	Gly	Gly	
705					710					715					720	
Lys	Asp	Glu	Leu	Ala	Thr	Ala	Thr	Glu	Ser	Thr	Val	Glu	Ile	Glu	Glu	
725					730					735						
Pro	Lys	Lys	Ala	Lys	Arg	Ser	Ser	Lys	Glu	Glu	Ala	Asp	Leu	Ala	Tyr	
740					745					750						
Ser	Ala	Phe	Leu	Leu	Gln	Ser	Asn	Thr	Ile	Ala	Ala	Glu	His	Gln	Asp	
755					760					765						
Gly	Pro	Lys	Glu	Ala												
770																

<210> 7
 <211> 23
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:extracellular
 residues of rabbit pIgR that precede
 membrane-spanning segment

<400> 7
 Asp Pro Ala Ser Gly Ser Arg Ala Ser Val Asp Ala Ser Ser Ala Ser
 1 5 10 15
 Gly Gln Ser Gly Ser Ala Lys
 20

<210> 8
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:extracellular
membrane proximal amino acids of rabbit pIgR with
C-terminal Cys added for conjugation

<400> 8

Asp Pro Ala Ser Gly Ser Arg Ala Ser Val Asp Ala Ser Ser Ala Ser
1 5 10 15

Gly Gln Ser Gly Ser Ala Lys Cys
20

<210> 9

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:extracellular
membrane proximal amino acids of rabbit pIgR with
C-terminal Cys added for conjugation

<400> 9

Ala Ser Val Asp Ala Ser Ser Ala Ser Gly Gln Ser Gly Ser Ala Lys
1 5 10 15

Cys

<210> 10

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:human pIgR
epitope for scFv and antibody 4A

<400> 10

Gln Asp Pro Arg Leu Phe
1 5

<210> 11

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:rat pIgR
epitope for scFv and antibody 4A and 5D

<400> 11

Leu Asp Pro Arg Leu Phe
1 5

<210> 12

<211> 9

<212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:human pIgR
 epitope for antibody 5D

 <400> 12
 Lys Ala Ile Gln Asp Pro Arg Leu Phe
 1 5

 <210> 13
 <211> 12
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:rat pIgR
 epitope for scFv 2E

 <400> 13
 Leu Asp Pro Arg Leu Phe Ala Asp Glu Arg Glu Ile
 1 5 10

 <210> 14
 <211> 12
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:rat pIgR
 epitope for scFv 2H

 <400> 14
 Asp Glu Asn Lys Ala Asn Leu Asp Pro Arg Leu Phe
 1 5 10

 <210> 15
 <211> 9
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:rat pIgR
 epitope for scFv 1F

 <400> 15
 Arg Leu Phe Ala Asp Glu Arg Glu Ile
 1 5

 <210> 16
 <211> 9
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:rat pIgR epitoe

for scFvs 5F, 10H, 1C, 7H and 6B

<400> 16

Leu Asp Pro Arg Leu Phe Ala Asp Glu
1 5

<210> 17

<211> 90

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:portion of
human pIgR encompassing part of domain 5 and
domain 6

<400> 17

Gly His Phe Tyr Gly Glu Thr Ala Ala Val Tyr Val Ala Val Glu Glu
1 5 10 15

Arg Lys Ala Ala Gly Ser Arg Asp Val Ser Leu Ala Lys Ala Asp Ala
20 25 30

Ala Pro Asp Glu Lys Val Leu Asp Ser Gly Phe Arg Glu Ile Glu Asn
35 40 45

Lys Ala Ile Gln Asp Pro Arg Leu Phe Ala Glu Glu Lys Ala Val Ala
50 55 60

Asp Thr Arg Asp Gln Ala Asp Gly Ser Arg Ala Ser Val Asp Ser Gly
65 70 75 80

Ser Ser Glu Glu Gln Gly Gly Ser Ser Arg
85 90

<210> 18

<211> 93

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:portion of rat
pIgR encompassing part of domain 5 and domain 6

<400> 18

Gly Gln Val Tyr Gly Glu Thr Thr Ala Ile Tyr Val Ala Val Glu Glu
1 5 10 15

Arg Thr Arg Gly Ser Pro His Ile Asn Pro Thr Asp Ala Asn Ala Arg
20 25 30

Ala Lys Asp Ala Pro Glu Glu Glu Ala Met Glu Ser Ser Val Arg Glu
35 40 45

Asp Glu Asn Lys Ala Asn Leu Asp Pro Arg Leu Phe Ala Asp Glu Arg
50 55 60

Glu Ile Gln Asn Ala Gly Asp Gln Ala Gln Glu Asn Arg Ala Ser Gly
65 70 75 80

Asn Ala Gly Ser Ala Gly Gly Gln Ser Gly Ser Ser Lys
85 90

<210> 19
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:human pIgR
stalk

<400> 19
Glu Lys Ala Val Ala Asp Thr Arg Asp Gln Ala Asp Gly Ser Arg Ala
1 5 10 15
Ser Val Asp Ser Gly Ser Ser Glu Glu Gln Gly Gly Ser Ser Arg
20 25 30

<210> 20
<211> 95
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:portion of
human pIgR

<400> 20
Cys Gly Val Lys Gln Gly His Phe Tyr Gly Glu Thr Ala Ala Val Tyr
1 5 10 15
Val Ala Val Glu Glu Arg Lys Ala Ala Gly Ser Arg Asp Val Ser Leu
20 25 30
Ala Lys Ala Asp Ala Ala Pro Asp Glu Lys Val Leu Asp Ser Gly Phe
35 40 45
Arg Glu Ile Glu Asn Lys Ala Ile Gln Asp Pro Arg Leu Phe Ala Glu
50 55 60
Glu Lys Ala Val Ala Asp Thr Arg Asp Gln Ala Asp Gly Ser Arg Ala
65 70 75 80
Ser Val Asp Ser Gly Ser Ser Glu Glu Gln Gly Gly Ser Ser Arg
85 90 95

<210> 21
<211> 98
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:portion of rat
pIgR

<400> 21

Cys Gly Val Lys Glu Gly Gln Val Tyr Gly Glu Thr Thr Ala Ile Tyr
 1 5 10 15
 Val Ala Val Glu Glu Arg Thr Arg Gly Ser Pro His Ile Asn Pro Thr
 20 25 30
 Asp Ala Asn Ala Arg Ala Lys Asp Ala Pro Glu Glu Glu Ala Met Glu
 35 40 45
 Ser Ser Val Arg Glu Asp Glu Asn Lys Ala Asn Leu Asp Pro Arg Leu
 50 55 60
 Phe Ala Asp Glu Arg Glu Ile Gln Asn Ala Gly Asp Gln Ala Gln Glu
 65 70 75 80
 Asn Arg Ala Ser Gly Asn Ala Gly Ser Ala Gly Gly Gln Ser Gly Ser
 85 90 95

Ser Lys

<210> 22
 <211> 288
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial
 Sequence: Pelb/4AF/myc/6HIS

<400> 22
 Met Lys Tyr Leu Leu Pro Thr Ala Ala Ala Gly Leu Leu Leu Leu Ala
 1 5 10 15
 Ala Gln Pro Ala Met Ala Gln Val Gln Leu Val Gln Ser Gly Gly Gly
 20 25 30
 Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
 35 40 45
 Phe Thr Phe Ser Ser Tyr Ala Met Ser Trp Val Arg Gln Ala Pro Gly
 50 55 60
 Lys Gly Leu Glu Trp Val Ser Ala Ile Ser Gly Ser Gly Gly Ser Thr
 65 70 75 80
 Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn
 85 90 95
 Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp
 100 105 110
 Thr Ala Val Tyr Tyr Cys Ala Arg Ser Phe Thr Val Asn Ser Gly Tyr
 115 120 125
 Phe Gln His Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly Gly
 130 135 140
 Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Ser Glu Ile Val
 145 150 155 160

Leu	Thr	Gln	Ser	Pro	Ser	Thr	Leu	Ser	Ala	Ser	Ile	Gly	Asp	Arg	Val
				165					170					175	
Thr	Ile	Thr	Cys	Arg	Ala	Ser	Glu	Gly	Ile	Tyr	His	Trp	Leu	Ala	Trp
			180					185					190		
Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	Tyr	Lys	Ala
	195						200					205			
Ser	Ser	Leu	Ala	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	Ser	Gly	Ser
	210					215					220				
Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	Glu	Asp	Phe
225					230					235					240
Ala	Thr	Tyr	Tyr	Cys	Gln	His	Tyr	Asp	Ser	Thr	Pro	Pro	Thr	Phe	Gly
				245					250					255	
Gln	Gly	Thr	Lys	Val	Asp	Ile	Lys	Arg	Ala	Ala	Ala	Glu	Gln	Lys	Leu
			260					265					270		
Ile	Ser	Glu	Glu	Asp	Leu	Asn	Gly	Ala	Ala	His	His	His	His	His	His
		275					280					285			

<210> 23
 <211> 4
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:peptide linker

<400> 23
 Gly Gly Gly Ser
 1

<210> 24
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:peptide linker

<400> 24
 Gly Gly Gly Ser Gly Gly Gly
 1 5

<210> 25
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:peptide linker

<400> 25
 Gly Gly Gly Gly Ser

1

5

<210> 26

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:scFv 4A epitope

<400> 26

Asp Pro Arg Leu Phe

1

5